

AMENDMENTS TO THE TITLE

Kindly replace the title used in the International Application with the following:

DRUG DISPENSING APPARATUS

AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph [0001] beginning on page 1, as follows:

[0001] The present invention relates to a drug dispensing apparatus for dispensing drugs contained in a cassette one by one, more specifically to a drug dispensing apparatus in which present quantity of the drugs contained in the cassette can be measured to confirm that the drugs has been taken out or forgotten to take out~~-an elongated object measurement apparatus for measuring an elongated object by using a plurality of switches disposed with uniform spacing.~~

Please amend the paragraph [0006] beginning on page 2, as follows:

[0006] However, in the apparatuses described in the patent documents 4, 6, because the sensor pitch has to be changed according to the ampoules of various types with different diameters, assembling and mass production were prohibited by a high cost.

In the apparatus described in the patent document 2, a belt scale was printed for each type of ampoules with different diameters. As a result, a large number of special plates were necessary.

In the apparatuses described in the patent documents 1, 3, 5, 7, 9, even if the decrease in the quantity of ampoules can be detected, the present quantity thereof cannot be detected and storage management is difficult.

Detection of the quantity of drugs by image recognition described in the patent document 8 is free from the above-described drawbacks, but it is costly and not suitable for practical use.

Please amend the paragraph [0007] beginning on page 3, as follows:

~~Detection of the quantity of drugs by image recognition described in the patent document 8 is free from the above-described drawbacks, but it is costly and not suitable for practical use.~~

The present invention was created with the above-described problems in view, and it is an object of the present invention to provide a drug dispensing apparatus capable of measuring the present quantity of drugs arranged in a row, regardless of the their size or type, to confirm that the drugs has been taken out or forgotten to take out.

Please amend the paragraph [0008] beginning on page 3, as follows:

~~[0008]—The present invention was created with the above-described problems in view, and it is an object of the present invention to provide an elongated object measurement apparatus capable of measuring the length or quantity of elongated objects such as drugs arranged in a row, regardless of the their size or type.~~

~~To resolve the above-described problems, the first invention provides an apparatus for measuring an elongated object comprising~~

- ~~—a constant voltage source;~~
- ~~—a first reference member for positioning one end of an elongated object;~~
- ~~—a second reference member for positioning the other end of the elongated object;~~
- ~~—a resistance circuit comprising a plurality of resistors connected in series, in which the resistor at one end is connected to the constant voltage source and the resistor at the other end is connected to the ground;~~
- ~~—a detection circuit comprising a plurality of switches that are disposed with uniform spacing along the elongated body and have one end thereof connected between the adjacent resistors and the other end thereof connected to a detection terminal;~~
- ~~—switch drive means provided at the second reference member and serving to turn the switch on;~~

~~—measurement means for measuring a voltage in the detection terminal of the detection circuit,~~
and

~~—computation means for computing the length or quantity of elongated materials based on the voltage measured by the measurement means.~~

To resolve the above-described problems, the first invention provides a drug dispensing apparatus comprising a cassette for containing drugs in an aligned state, a rotor disposed at one open end of the cassette, a pushing unit for pushing the drugs toward the rotor, a drive mechanism for pivoting the rotor alternately between a dispensing position and a receiving position by operating a drive switch to dispense the drugs one by one, and a measuring unit for measuring the present quantity of the drugs in the cassette, characterized in that:

a memory unit for storing a stock quantity N_0 of the drugs in the cassette is further provided; and

wherein when the rotor is returned to the receiving position from the dispensing position, the present quantity N measured by the measuring unit is compared with the stock quantity N_0 stored in the memory unit, wherein if the present quantity N is less than the stock quantity N_0 , the present quantity N is stored in the memory unit as a stock quantity N_0 , while if the present quantity N is same as the stock quantity N_0 , it is informed that the drug has been forgotten to take out.

In accordance with the second invention, the measuring unit comprises:

a constant voltage source;

a resistance circuit comprising a plurality of resistors connected in series, in which the resistor at one end is connected to the constant voltage source and the resistor at the other end is connected to the ground;

a detection circuit comprising a plurality of switches that are disposed with uniform spacing along the drugs and have one end thereof connected between the adjacent resistors and the other end thereof connected to a detection terminal;

switch drive means provided at the pushing unit and serving to turn the switch on;

measurement means for measuring a voltage in the detection terminal of the detection

circuit; and

computation means for computing the present quantity of the drugs based on the voltage measured by the measurement means.

The term "constant voltage source" includes a DC constant voltage source and a constant voltage AC source (AVR). The arrangement of "resistors" includes not only the arrangement with a constant spacing, but also an arrangement according to the prescribed order.

Please amend the paragraph [0009] beginning on page 4, as follows:

[0009] In accordance with the ~~second~~third invention, in the ~~first~~second invention, the detection circuit comprises three parallel circuits connected alternately to the switches.

In accordance with the ~~third~~fourth invention, in the ~~second~~third invention, every other switch is removed.

Please amend the paragraph [0010] beginning on page 4, as follows:

[0010] In accordance with the ~~fourth~~fifth invention, in the ~~first or second~~second to fourth invention, the switches are disposed equidistantly in the circumferential direction and the measurement of an elongated object in the form of a circular arc is made possible.

Please delete the paragraphs [0011] and [0012] beginning on page 4, as follows:

~~[0011]—In accordance with the fifth invention, the computation means
—computes the difference between a first measurement value obtained by the measurement means when an elongated material of a first reference length is disposed and a second measurement value obtained by the measurement means when an elongated material of a second reference length is disposed;
—computes the ratio of the difference between the first measurement value and second~~

measurement value to the difference between the first reference length and second reference length, and

—— computes the length or quantity of an elongated object to be measured, from the measurement value obtained by the measurement means when the elongated object is disposed and from the ratio.

[0012] Here, "the first reference length" is not limited to one elongated object that is to be detected and may relate to several objects. "The second reference length" may be different from the first reference length and the number thereof is not limited.

Please amend the paragraph [0013] beginning on page 5, as follows:

[0013] In accordance with the sixth invention, in the first invention, the measuring unit comprises: ~~The sixth invention provides an apparatus for measuring an elongated object comprising:~~

a constant voltage source;

—— a first reference member for positioning one end of an elongated object,

—— a second reference member for positioning the other end of the elongated object,

a resistance circuit comprising a linear resistor disposed along the elongated object drugs

and having one end thereof connected to the constant voltage source and the other end thereof connected to the ground,

a detection circuit comprising an electrically conductive sliding member disposed at the second reference member and having one end thereof in sliding contact with the resistor and the other end thereof connected to a detection terminal,

measurement means for measuring a voltage in the detection terminal of the detection circuit, and

computation means for computing the ~~length or quantity of elongated materials present~~ quantity N of the drugs based on the voltage measured by the measurement means.

Please amend the paragraph [0014] beginning on page 6, as follows:

[0014] In accordance with the seventh invention, in the second or sixth invention,

the computation means

computes the difference between a first measurement value obtained by the measurement means when ~~an elongated material~~ a drug of a first reference length is disposed and a second measurement value obtained by the measurement means when ~~an elongated material~~ a drug of a second reference length is disposed,

computes the ratio of the difference between the first measurement value and second measurement value to the difference between the first reference length and second reference length, and

computes the ~~length or present~~ quantity of ~~an elongated object~~ the drugs to be measured, from the measurement value obtained by the measurement means when the ~~elongated object~~ drug is disposed and from the ratio.

Here, "the first reference length" is not limited to one elongated object that is to be detected and may relate to several objects. "The second reference length" may be different from the first reference length and the number thereof is not limited.

Please amend the paragraph [0015] beginning on page 6, as follows:

[0015] The effect attained in accordance with the present invention is that the ~~length or present~~ quantity of ~~elongated objects such as drugs~~ arranged in a row can be measured regardless of their size or type to confirm that the drugs has been taken out or forgotten to take out.

Please amend the paragraph [0017] beginning on page 10, as follows:

[0017] 14 reed switch

23 rotor (~~first reference member~~)

24 pushing unit (~~second reference member~~)

32 magnet (switch drive means)

100 control unit (measuring means)

100 control unit (computing means)

Please amend the paragraph [0019] beginning on page 10, as follows:

[0019] Fig. 1 shows a drug dispensing apparatus according to the present embodiment comprising an elongated object measurement device ~~according to the present embodiment~~. A storage shelf 2 is provided at a frame body 1 of the drug dispensing apparatus, a plurality of cassettes 3 are arranged side by side in the horizontal direction in the storage shelf 2 and disposed in multiple stages in the vertical direction. A printer 4 for releasing a paper sheet having an injection label containing the name, quantity, etc. of the dispensed drug is disposed below the storage shelf 2, an accommodation section 5 that accommodates the drug boxes or the like is provided below the printer 4. An operation and display panel 6 is provided on the front surface on the right side of the storage shelf 2, enabling the prescribed input and display. A user authentication device 7 verifying the fingerprint of an operator and checking whether the operator is an authorized person is provided below the control panel 6. A door or a shutter is provided on the front surface of the storage shelf 2. If necessary, it is cooled and maintained at the prescribed temperature. Furthermore, the reference numeral 100 stands for a control unit of the drug dispensing apparatus; it includes a memory unit 101.

Please amend the paragraph [0037] beginning on page 20, as follows:

[0037] An apparatus for measuring the elongated objects that ~~of the present invention that~~ uses reed switches 14 will be described below.

Please amend the paragraph [0051] beginning on page 29, as follows:

[0051] Another embodiment of the elongated object measurement apparatus will ~~in accordance with the present invention will~~ be described below. In this embodiment, the reed switches 14 that were employed in the above-described embodiment are not used, and a slide resistor is employed. In the explanation below, the components identical to those of the above-described embodiment will be assigned with identical reference numerals and explanation thereof will be omitted. Only different components will be explained.